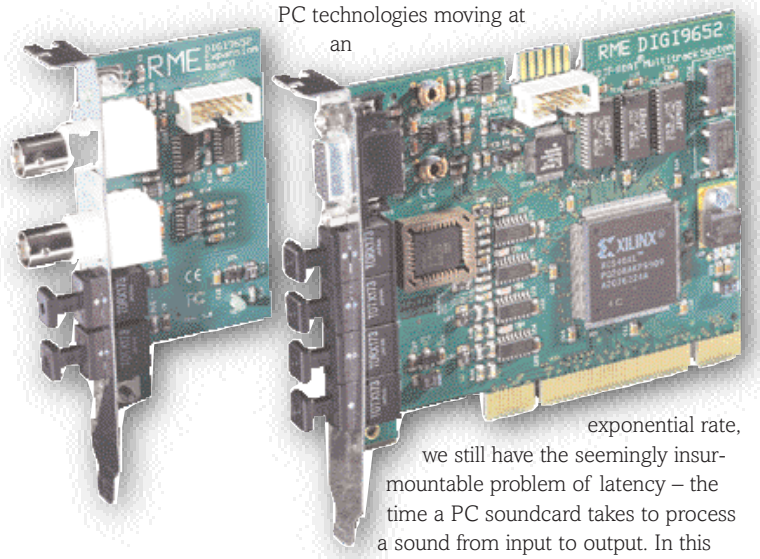
RME DIGI 96 Pad and DIGI 9652

RME have used new ASIO2 drivers to take their soundcards one step further. Guy Harrison goes hammer and tongs.

The dream of a recording studio in a PC with all its 'obvious advantages' has been with us for the best part of a decade. While the concept has obvious appeal, many of the pioneers in pursuit of this electronic Nirvana gave up in frustration. Problems with system overheads, poor HD access time, and newly developing software all contributed to their woes. In 1999, with PC technologies moving at an exponential rate, we still have the seemingly insurmountable problem of latency – the time a PC soundcard takes to process a sound from input to output. In this regard the PC still falls short of the mark, expecting users to put up with figures in the range of 50ms or more (ASIO), to hundreds of milliseconds (MME). Long latency makes transport controls feel sloppy, and it makes internal monitoring for the purpose of overdubbing impossible.



It's nice to know that RME Audio in Germany are equally fed up with monitoring their recordings out of time, and are the first company to include the new ASIO2 spec in the drivers for their new range of soundcards. ASIO2 is a Steinberg development first implemented in Cubase 3.7 for PC (just released), and promises 'no latency monitoring' of input signals. As an added bonus, RME has had the forethought to future proof their latest products by giving them all 24-bit/96k compatibility.

The new range from RME includes the DIGI96 (equipped with S/PDIF I/O only), the DIGI96/8 (S/PDIF and ADAT I/O), the DIGI96 Pro (which adds 20-bit analogue outputs), the DIGI96 Pad (includes 20-bit analogue inputs and outputs) and, the daddy of them all, the DIGI9652. The DIGI9652 is code named 'Project Hammerfall' and is devoid of any analogue I/O but supports up to 48 channels of ADAT I/O with wordclock as standard, and includes nine-pin ADAT sync. All impressive stuff on paper – let's see if RME can really make my software feel like a tape machine.

DIGI96 Pad

First up is the DIGI96 Pad, which is based on a standard sized PCI card and should pose no problem for those tight on space. The card features the popular ADAT optical interface plus S/PDIF and AES/EBU (on a nine-pin D-sub break-out cable). There's also provision to connect your CD-ROM drive digitally to the card, given your CD-ROM has a digital output. Analogue I/O is provided on two TRS jack connectors, one for stereo (unbalanced) input and one for stereo (unbalanced) output, these are -10dBv by default, switchable to +4dBu by way of a jumper on the card. An LED is provided which lights red when no valid digital input is found, extinguishing when one is. While not terribly exciting, this is a handy troubleshooting tool which could save a lot of head scratching. RME also supply an optional wordclock module for the DIGI96 range, which adds wordclock on BNC connectors and also provides an easy means of synchronising multiple cards. This is a small companion board that doesn't take a slot on the PC's motherboard, but connects to the DIGI96 card with a pair of three wire cables.

Installation

Installing the DIGI96 Pad was a dream. After physically installing the card and turning the computer on, Windows happily found the card and went into driver wizard mode. After a little prompting to let Windows know where the driver was residing (on CD), we were away. RME claim to have done their homework when it comes to simplifying card installation through the use of complete IRQ sharing and, to their credit, it seems to work. The card was installed in no time – a small card

icon in the system tray being the only sign anything had changed. Clicking on this icon launches the DIGI96 Pad's ASIO and Settings control panel. The ASIO controls allow for the choice of four settings: 16-bit/46ms, 32-bit/23ms, 16-bit/12ms and 32-bit/6ms. While RME recommend the 16-bit/46ms setting for most stable operation, at 48k the DIGI96 Pad had no problem managing 32-bit/23ms on a (relatively) humble 200MMX PC, and happily ran eight tracks at the 32-bit/6ms setting on a P3 400MHz machine.

The Settings controls make light work of synchronisation issues through some clever options. Standard sync features are all here. A list allows you to nominate which input to use for synchronisation purposes, while an Auto Select option will continually scan the DIGI96 Pad's inputs looking for a valid signal, locking on when one is found. Auto Select used in conjunction with the Autosync feature means that after the card finds a valid input signal matching the playback frequency it will automatically switch from internal reference (master) to the clock arriving at its input (slave). All this allows for fail-safe on-the-fly recording from any input without having to be concerned with clock mode. This is the only card I know of that handles synchronisation in this way and it simplifies matters considerably, particularly for those unfamiliar with sync issues.

Padding Up

First up I tested the DIGI96 Pad in a 200MMX PC (64MB RAM) teamed with a Yamaha O1V digital desk with optional ADAT I/O fitted, and then repeated the tests on a P3 400MHz (128MB RAM) machine. In both machines the card performed admirably. Recording eight tracks through Cubase VST proved a simple affair and I must say that with ASIO2 direct monitoring enabled, it was quite easy to forget which computer system I was working on. That said, the 400MHz P3 machine had no problem achieving 3ms latency (and that's with VST compression and reverb running), while the 200MMX system really needed the 16-bit/46ms mode for serious multitracking.

RME has also done extensive research on busmaster technology to ensure very low system overheads, and this was evident on both systems. While the ASIO2 direct monitoring is a definite plus, it must be appreciated that with the DIGI96 Pad this option is essentially a hardware bypass – so your mixer in Cubase is no longer active for pan and level purposes on that channel. While this is a slight drawback, the fact that you can switch the hardware from within Cubase is a major step in the right direction. As RME's drivers are the first to implement the ASIO2 spec, I'm sure future refinements will soon see total control from within Cubase.

The DIGI96 Pad also performed well in the sound quality department. At 48k it sounded more detailed than my current 20-bit soundcard (with externally mounted A/D conversion). Switching to 96k, the sound was nothing short of stunning, with the top end taking on a level of clarity and openness that until now I hadn't heard in any sound card.

The DIGI96 Pad is a winner on all fronts. I'm sure other manufacturers will be rushing to update their drivers to take advantage of the ASIO2 spec. For now though, RME has a card and driver combination that seems to point to the next chapter of hard disk recording. With its advanced busmaster technology keeping CPU overheads to a minimum, and direct or low latency options, I'm sure the DIGI96 Pad will please many. Highly Recommended.

Hammer Time

The DIGI9652 Project Hammerfall comes packaged in the same compact box as its cousin, and, like the DIGI96 Pad, the manual arrives on a CD in Adobe Acrobat or Word format for printing. Unlike the DIGI96 Pad, the DIGI9652 is a two card package – a main PCI card and a daughterboard. The 12.5cm main PCI card houses all the basic electronics, and offers two ADAT inputs and outputs along with ADAT sync and S/PDIF on a nine-pin D-sub breakout cable. A CD-ROM connection point is also provided. If you need no more than 16-channel operation this card will operate without the daughterboard.

The daughterboard itself connects to the main board by a short cable, and space must be made to mount the cards side by side. The daughterboard adds a third ADAT I/O and BNC wordclock connectors, as well as an LED that lights green when a valid digital signal is received at any input. As I mentioned earlier, the DIGI9652 has no analogue I/O, making it more appealing for people with a fair investment in ADAT lightpipe technology. ADAT owners interested in taking advantage of the on-screen editing offered by today's PC programs, and owners of digital desks keen to bypass the tape medium or unnecessary D/A and A/D conversion, will appreciate the ADAT I/O. It's also worth noting that with the newly released MME drivers you can be assured your DIGI9652 will work with any program available.

Installation

Much like the DIGI96 Pad, installation of the DIGI9652 was straightforward. When the computer was powered up the device was recognised, and once the drivers were installed we were ready for action. This time a pink hammer was hiding in my system tray and, once again, the icon provides quick access to Settings, ASIO and MME options. The ASIO settings can be adjusted from a latency of 186ms down to 1.5ms, though it must be pointed out that just because a setting exists doesn't mean your computer will be able to cope with it – lower latency means smaller buffer settings, and if you set the buffer too small for your computer's processing power, audio glitches will occur. I was able to achieve stable operation with a 186kB buffer, for 3ms latency on a P3 400MHz computer. Latency that low makes ASIO direct

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monitoring somewhat redundant, although people with lesser machines (that can't manage buffers this small) will still be thankful. As expected, RME has carried on the excellent AutoSync and SyncCheck features of the DIGI96 range (see above for full details) into the DIGI9652 and added a timecode display to deal with sample accurate ADAT sync.

In Use

For testing, I got busy flying some vocals off an ADAT XT into Cubase through the DIGI9652 – in order to clean up some of the vocalist's irritating breath noises – then flew them back onto the ADAT, all in sample accurate sync. This took a moment of configuring within Cubase because transferring audio with sample accuracy requires two levels of sync: sample frequency (wordclock) and sample position (timecode). With nine-pin ADAT sync connected from the output of the XT to the input of the DIGI9652, and 'ADAT 1' selected as the sync reference within the Settings controls, we were ready to make the transfer. This all took place with a minimum of fuss, and a lock up time of no more than one to two seconds was achieved. After editing, the vocal was returned to the ADAT with the same ease in which it was removed. The ADAT and computer performed seamlessly and, used in this way, made for a very powerful and inspiring setup. Simply put, a pleasure to use.

A Real Hammering

The DIGI9652 is a powerhouse card that delivers on its promises. The 'virtual' manual is well written and the supplied CD contains a swag of useful utilities which I unfortunately don't have the space to discuss in this review. The RME web site also contains some useful information (like how they manage to get 24-bit/96k data to share two 16-bit ADAT tracks), and if RME's driver update policy is to be believed then they seem committed to keeping things on the cutting edge.

I've always believed that if you get the small things right, the big picture will fall into place. With their Autosync and SyncCheck technology, RME has indeed got the small things right. Now maybe we can get on with the big picture – audio engineering. Hallelujah.

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• *RRP: $1595 (9652); $1495 (DIGI96 Pad)*

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